

TURKISH WATERS: SOURCE OF REGIONAL CONFLICT OR CATALYST FOR PEACE?

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Abstract. Unlike most Middle East countries which are highly dependent on water from sources originating in other countries or on desalination, Turkey is naturally endowed with relatively abundant water resources. The Turkish government has assigned the highest priority to completing its massive \$32 billion Southeastern Anatolia Project (GAP), consisting of 22 dams and 19 hydroelectric power plants on the Euphrates and Tigris rivers. Scheduled for completion in 2005, GAP will generate 27 billion kilowatt hours of hydroelectric power and will divert water from the Atatürk Dam reservoir through the two giant Şanlıurfa Tunnels into a canal system to irrigate 1.7 million hectares in south-eastern Anatolia just north of the Syrian border. For Turkey, GAP will not only provide food and energy for a growing population, but is the crux of a comprehensive and sustainable economic development plan designed to end instability and reduce out-migration by radically transforming the feudal economic and social structure of this poor and largely Kurdish inhabited region of the country. Syria and Iraq, the downstream riparians in the Tigris-Euphrates Basin, also have rapidly growing populations and ambitious development plans. They contend that GAP will greatly diminish and degrade their water supply in future years. The severe current drought conditions in Syria and Iraq have added urgency to their demands for a greater share of the rivers' flow. This article examines the legal, political, military and technological strategies employed by the parties to advance their interests. After reviewing efforts to achieve a negotiated solution, we examine various Turkish proposals to foster regional peace by exporting water from other Turkish rivers to Cyprus, Israel, the Gaza Strip, Jordan, and other Arab countries.

Keywords: international rivers, regional cooperation, Tigris-Euphrates Basin, water exports, water law

1. Introduction

Although Turkey, Syria and Iraq have been engaged in intermittent diplomatic negotiations and technical discussions over the waters of the Euphrates River for decades, they have been unable to agree on a permanent tripartite treaty that would set the terms for "sharing" (Syrian and Iraqi terminology) or "allocating" (Turkish terminology) the river's flow among the three riparians. Because of the drought conditions affecting much of the region, declared to be the most severe in 60 years in Syria, Israel and Jordan, and the most "catastrophic" in nearly a century in Iraq (Khalil, 1999), this chronic controversy has now become acute. The increase in demand due to rapidly growing populations, ambitious development plans, and rising economic expectations, all add urgency to the need to develop reasonable and efficient means of utilizing this precious and limited resource. Since the Tigris and Euphrates flow through the territory of three states, both logic and equity



argue for achieving a cooperative approach by the three riparians. However, issues of national sovereignty, historical grievances and conflicting interests have impeded collaboration and have led to the perception that this is a zero sum game. While the total average annual flow of the Euphrates is 35.58 billion cubic meters (BCM), to which Turkey contributes more than 88 percent and Syria less than 12 percent, the combined planned future consumption of Turkey (18.42 BCM), Syria (11.30 BCM), and Iraq (23 BCM) totals 52.92 BCM. As more water is drawn off for irrigation and industrial uses by the upper riparians, less remains available for downstream users.

It is natural that Turkish President Süleyman Demirel, an engineer who early in his career headed the country's Dam Department (1954-55) and the State Hydraulic Works (1955-60), proudly calls the \$32 billion Southeast Anatolia Project (GAP) "a symbol of national achievement" that will enable Turkey "to assume its historical place in the world scene as a leading country fully able to complete the most advanced projects using the most modern technology" (Demirel, 1992). This integrated system of 22 dams and 19 hydroelectric power plants on the Euphrates and Tigris will generate 27 billion kilowatt hours of hydroelectric power – saving energy-poor Turkey some 28 million tons of oil imports annually, and divert sufficient water to irrigate an additional 1.7 million hectares (Bagis, 1989).

Since the planned development projects of Turkey, Syria and Iraq together far exceed the projected annual flow in the Tigris-Euphrates Basin, this has resulted in friction among them. Water disputes have at times even brought the parties to the brink of conflict. In the early 1970s, Iraq threatened to go to war with Syria because construction of the Tabqa dam and the filling of Lake Assad reservoir temporarily deprived Iraq of some of the Euphrates' flow. Soviet and Saudi mediation in 1975 helped avert hostilities (Kienle, 1990,). In response to the imminent threat of diminished flow to both countries by Turkey's impounding of Euphrates water to fill the Atatürk Dam, the rival Ba'athist regimes in Damascus and Baghdad finally signed an agreement on April 16, 1990, under which Syria would receive 42% and Iraq 58% of the river's annual flow from Turkey, regardless of quantity (Beschoner, 1992).

Earlier, in December 1980, Turkey and Iraq had established a Joint Technical Committee (JTC) for information exchange and to "decide the methods and procedures which lead to a definition of the reasonable and appropriate amount of water that each country needs" from the two rivers. Although Syria had been invited by Ankara to participate, it did not join the JTC meetings until 1983. The JTC met fairly regularly for seven years, until talks were suspended after the Iraqi invasion of Kuwait in 1990 (Bilen, 1996). Basic political disagreements among the parties have colored their approach even to technical issues.

This article will examine the legal, political, military and technological strategies employed by the parties to advance their interests and will review different Turkish proposals to export water from to various areas in the region.

2. History of Negotiations

Under the Treaty of Lausanne of 1923, which established the relations of the new Republic of Turkey with its neighbors, Ankara agreed to consult Iraq before undertaking any hydraulic works. In 1946, Turkey and Iraq had signed a Protocol for the Control of the Waters of the Tigris and Euphrates and Their Tributaries. They agreed then that flood control dams and storage facilities would most effectively be built upstream on Turkish territory. They promised to exchange hydrological and meteorological data daily during flood periods. Cooperation worked well until 1964, when Turkey completed plans to construct the Keban Dam and Power Plant on the Euphrates. Ankara submitted the plans to Syria and Iraq, and in meetings with their technical experts, pledged to supply 350 m³/sec downstream of the dam, assuming that there was sufficient natural flow. In a tripartite meeting in Baghdad in September 1965, Turkey first proposed creation of a Joint Technical Committee to study the entire Tigris-Euphrates basin. At that time, Syria endorsed a Turkish proposal that the Euphrates and Tigris flow should be considered together so that if Euphrates water was insufficient to meet all the irrigation needs of the three riparians, some Tigris flow would be diverted and channelled into the Euphrates. Iraq strongly opposed this and insisted on discussing only the Euphrates. However, after 1980, Syria changed its position and has since then joined with Iraq in insisting that each river be considered separately (Bilen, 1996).

In 1975 Turkey approached the World Bank for funding for the Karakaya Dam on the Euphrates. Bank experts conducted a technical study and concluded that if Turkey maintained an average monthly discharge of 500 cubic meters per second (m³/sec) at the point it flowed into Syria, the existing downstream requirements for power generation and irrigation and future growth could be met. Turkey and the Bank agreed on this formula, which was termed the "Rule of 500." Ankara informed Syria and Iraq and offered to conclude a tripartite agreement to monitor its compliance. But when both Syria and Iraq raised objections, the Bank deferred funding. Turkey then financed both this dam and the massive Atatürk Dam largely on its own. The Turkish and Syrian prime ministers met in July 1987 and concluded a Protocol of Economic Cooperation, Article 6 of which gave approval, but only on a provisional basis, to the World Bank formula: "During the filling up period of the Atatürk Dam reservoir and until the final allocation of the waters of the Euphrates among the three riparian countries, the Turkish side undertakes to release a yearly average of more than 500 m³/sec at the Turkish-Syrian border," adding that whenever the monthly flow fell below this level, Turkey would make up the difference during the following month. (Turkey, 1987).

The Atatürk Dam began to produce electricity in July 1992 and the first of the two giant irrigation tunnels was completed in November 1994. At first only some 30 m³/sec were being diverted, or less than 10 percent of the system's ultimate capacity, but this is gradually being increased as the necessary irrigation canals are

completed. It is the cumulative effect of the entire GAP project that worries Turkey's southern neighbors, especially when they read forecasts in the Turkish press that the country's growing domestic water needs will eventually require Ankara to reduce the quantity below 500m³/sec. Turkey contends that through the JTC it meets its obligation to keep Syria and Iraq informed and denies their claim to veto or restrict projects in Turkey.

In December 1992, Syria launched a diplomatic offensive in the Arab League to put pressure on Turkey and urged League members not to finance Turkish water projects. The Syrian démarche charged that while Ankara had concluded agreements on common waters with Russia, Bulgaria and Greece, Turkey refused to sign a "just and reasonable agreement" with Syria and Iraq (*Cumhuriyet*, Dec. 25 and *Turkish Daily News*, Dec. 26, 1992). The timing of the Syrian complaint was attributed to the signing by the Turkish Government of an agreement a few days earlier for construction of the Birecik Dam and hydropower plant. This dam, the fourth largest on the Euphrates, was to be built by a consortium of Turkish, German, Belgian, Austrian and French firms.

Dismissing the Arab reaction as politically motivated rather than based on facts, Turkish officials have pointed out that the Birecik dam and the projected Karkamiş dam closer to the Syrian border were intended primarily for hydroelectric power generation. Irrigation and evaporation losses in the reservoirs would be more than made up by the benefits accruing to Syria and Iraq from the increased storage capacity provided by this and the other Turkish dams. Not only would they provide a reserve during years of drought, but they would also regularize the flow throughout the year by smoothing out the sharp seasonal fluctuations in the river's natural flow. Ankara noted that during the drought of 1991, when the flow of the Euphrates had dropped to 190 m³/sec, Turkey continued to provide Syria with 500 m³/sec by releasing water from the Keban and Karakaya dams, causing a one year delay in the filling of the Atatürk Dam (Yetkin, 1993). More recently, Baki Ilkin, the Turkish Ambassador to the U.S., confirmed in February 1999 that despite the current drought in the region, Ankara was fulfilling its commitment to supply Syria with 500 m³/sec. Asserting that "Syria has ample water running from the Euphrates River," he added: "We are prepared to allocate water to Syria, we have no intention of using the waters of the Euphrates as a bargaining chip or as a threat towards Syria." He also claimed that, "at the moment, Syrians get more water per capita than do Turks" (Ilkin, 1999).

Seeking to improve Turkish-Arab relations in the wake of the controversy in December 1992 over the planned Birecik Dam, Premier Demirel travelled to Damascus and met with President Hafez al-Assad the following month. The Syrians expressed the view that since the Joint Technical Committee, after 16 meetings, had failed to meet the parties' expectations, the issue be taken up at the political level. At the end of the discussions on January 20, a joint communiqué was issued declaring that "pursuant to the 1987 Protocol, the foreign ministers of the two countries would assign top officials to achieve, before the end of 1993, a

final solution determining the allocation to the parties from the waters of the Euphrates river." (*Newspot*, January 28, 1993.) To reassure the Syrians, Demirel declared: "There is no need for Syria to be anxious about the water issue. The waters of the Euphrates will flow to that country whether there is an agreement or not." Officials in Ankara noted that following Iraq's invasion of Kuwait, Turkey rejected the advice of some of its NATO allies to pressure Iraq by reducing the water flow. However, in compliance with United Nations sanctions, Turkey did close the oil pipeline from Iraq to Turkey's Mediterranean coast, at a cumulative cost to Turkey's economy that has been estimated by Turkish officials as exceeding \$30 billion.

3. Security and Water Issues Linked

The January 1993 communiqué also stated that Syria and Turkey had reiterated their determination not to permit any activity on their respective territories "detrimental to each other's security." The 1987 water protocol had been implicitly linked to another protocol, signed at the same time, under which Syria promised to cooperate with Turkey on issues of security along their 877-kilometer border and pledged not to "permit" anti-Turkish activities within its borders. Ankara had demanded this in exchange for its water supply commitment because the Syrian regime had over the years permitted various militant groups opposed to the Turkish regime to operate from bases in Syria itself and in the Syrian-controlled Beqaa valley in Lebanon. These included Dev-Sol (a revolutionary leftist Turkish group), ASALA (an Armenian extremist group) and most significantly, the Kurdistan Workers Party (PKK), originally a Marxist-Leninist Kurdish group outlawed in Turkey, whose original aim was to carve out an independent Kurdish state from Turkey's eastern Anatolian provinces and unite it with neighboring Kurdish areas. Since 1984, the PKK, listed as a terrorist group by the U.S. and other Western countries, has engaged in a guerrilla war against Turkish forces in southeast Turkey and has also employed tactics of intimidation and terrorist attack against Turkish school teachers and other civilians. By the beginning of 1999, this protracted conflict had resulted in more than 30,000 killed, and a cost of over \$50 billion, according to official Turkish estimates (Barkey and Fuller, 1998; *Turkish Times*, 1999).

Syria failed to live up to its 1987 commitment. Although the PKK center of operations was moved from Syria itself to Lebanon's Beqaa valley, which remains under Syrian military control, Abdullah (Apo) Ocalan, the PKK political leader continued to reside and move freely within Syria, despite repeated Turkish demands for his extradition. Upon his return from Damascus in January 1993, Demirel recounted to his True Path Party colleagues that it was Syrian President Assad himself who had assured him that Syria was not behind any terrorist activity against Turkey. "Instead of asking Assad why Abdullah (Apo) Ocalan, the

leader of the outlawed PKK, was still in Syria," Demirel said, "I presented Assad with some addresses, telephone numbers and post office boxes in Damascus, Aleppo and Latakia which belong to Apo." (Quoted by Yetkin, 1993). İlnur Çevik, editor-in-chief of the *Turkish Daily News*, who accompanied Demirel, confirmed that Assad took the note, feigned surprise, and promised to investigate (Çevik, 1993).

It was not until October 1998, after increasingly blunt Turkish official threats to take military action against Syria unless it ended all support for the PKK, that the "serious crisis" in Turkish-Syrian relations was defused as a result of intensive mediation by President Hosni Mubarak of Egypt and high level interventions by the Iranians and Americans, who sent "the right message" to Damascus. Ocalan was finally expelled from Syria, and after wandering for months from country to country, was eventually captured by Turkish agents in Nairobi, Kenya, brought to Istanbul and placed on trial for treason in May 1999. On October 20, 1998, high level representatives of Turkey and Syria met in Adana, Turkey and concluded a special security agreement, in which Syria explicitly pledged not to support the PKK in any way. Both sides promised to cooperate in improving security along their common border and established a hotline between their military commanders to prevent unintended incidents. Typical of the cautiously positive Turkish response was the comment of Ambassador Ilkin: "I am delighted to say that Syria has been able to respond to our requests – very belatedly – yet better late than never." He added that it was "absolutely imperative" that Syria "implement the understanding in full," if the two countries were "to move forward together, hand in hand" to start a new chapter of positive relations, which he envisaged as encompassing "economic cooperation, technical cooperation, more trade volume, more cultural contacts." While there have been some recent discussions on bilateral trade and tourism, according to Syrian and Turkish officials at the United Nations with whom the author spoke in early June 1999, there have not yet been any joint discussions on water issues. The capture of Ocalan and the latest Syrian-Turkish agreement, if faithfully implemented, means that Damascus will no longer have the PKK card to play in its attempts to disrupt the implementation of the GAP projects. Indeed, if the PKK insurrection is finally ended, and if Ankara adopts wise policies to address the legitimate grievances of its citizens in the Kurdish regions, this will free up some \$7 billion annually in the Turkish budget, which can be allocated to developing the necessary infrastructure in the underdeveloped GAP area. If instability in the region ends, Turkish and foreign businesses will be less reluctant to invest in industrial and agricultural ventures in the southeast.

To return to our review of the efforts to resolve the water disputes by diplomatic means, a Syrian delegation came to Ankara for negotiations in May 1993, but after three days no progress had been achieved. Ankara proposed that in addition to the Euphrates, the flow of the Orontes should be discussed. Ankara complained that the Syrians were utilizing virtually all of the flow of the Orontes

(Asi in Turkish), an international river that flows northward from Lebanon through Syria, before passing through the Turkish province of Hatay (Alexandretta) and flowing into the Mediterranean at Antakya (Antioch). The Syrians categorically refused to discuss the "Arab waters" of the Orontes with Turkey, since Damascus still does not recognize Turkish sovereignty over Alexandretta, which was detached from Syria in 1939 after a disputed plebiscite conducted by the French mandatory authorities. Iraq was invited to join the next negotiating session, scheduled for June 1993. The Iraqi delegation came, but the Syrians, without explanation, stayed away. The Iraqi delegation supported the basic Syrian position, reiterated the notion of a mathematical division of the Euphrates' flow and demanded that the quantity released by Turkey be raised to 700 m³/sec. No agreement was reached in 1993.

As implementation of the GAP project has progressed, Syria and Iraq have reiterated their complaints. Thus, for example, Syria, in December 1995, and Iraq, in January 1996, sent notes of protest to Ankara claiming that the Birecik dam would reduce the flow of the Euphrates and that Turkish irrigation activities had already polluted the river. Ankara responded with notes denying and refuting the allegations. Most recently, in May 1999, Syria issued a formal protest to the British Foreign Office over the government's plan to guarantee a £1 billion credit to the British firm Balfour Beattie to construct the Ilisu dam on the Tigris river. Jordan also protested, on behalf of Iraq, claiming that the dam project was "a breach of international law" since Baghdad had not been consulted, and that the use of water for irrigation in Turkey which then passes to Syria and Iraq "will pollute the flow with agro-chemicals and pesticides." As a result, "millions of Iraqis will be denied their right to clear water." UK Defence Forum, a British think-tank advising the government on regional risks, warned that support for the project might involve Britain "in armed conflict between Syria, Iraq and Turkey over the right to water from the Tigris." In response to the various protests, joined by British Liberal Democrats and the environmental group Friends of the Earth, Trade Minister Brian Wilson responded: "A great deal of care is being taken to ensure that proper relocation and compensation arrangements are drawn up and implemented for the local population, and that water quality and water flow issues are fully addressed" (Brown, 1999).

4. Opposing Legal Views and UN Efforts To Codify International Water Law

Underlying Arab charges that Turkey is violating international water law is their view of the legal status of the Euphrates River. Iraq and Syria consider it to be an international watercourse which is to be treated as an integrated whole. Furthermore, Iraq contends that the basic injunction against causing "appreciable" harm bars upper riparians from reducing the natural flow to established

downstream users, who have "historically acquired rights," without their consent. The official Turkish position is that international rivers are only those which form the border between two or more riparians. Ankara regards the Euphrates as a transboundary river, under Turkey's exclusive sovereignty until it flows across the border into Syria. It is only after the Euphrates joins the Tigris in lower Iraq to form the Shatt al-Arab, which serves as the border between Iraq and Iran that it becomes an international river. In August 1991, when Demirel was prime minister, he summed up the Turkish position as follows: "Water is an upstream resource and downstream users cannot tell us how to use our resource. By the same token oil is an upstream resource in many Arab countries and we do not tell them how to use it." (*The Middle East*, August 1991). The Arab states reject the analogy, arguing that oil is like other mineral resources that stay in one place until drilled and pumped out by human effort, while water flows naturally to downstream riparians unless interrupted by human intervention.

Turkish officials used to cite the Harmon Doctrine, named for the U.S. Attorney-General who in a dispute with Mexico in the late 19th century asserted a similar absolute American sovereign right to utilize the Rio Grande (Rio Bravo). However, by 1942 the Legal Adviser of the State Department acknowledged that no recent treaty still supported the Harmon Doctrine (Hackworth, 1964). Dante Caponera, the international legal authority who in 1966 drafted the International Law Association's Helsinki Rules on the Uses of the Waters of International Rivers, similarly told the author, in December 1992, that no international arbitral decision supports the Harmon Doctrine. In an effort to reconcile the conflicting claims of upper riparians for more water for a growing population and economic development against the historical rights of lower riparians, the International Law Association asserted the principle of "equitable" and "optimal" utilization subject to the requirement that no "appreciable" (later changed by the ILC to "significant") harm be done to other riparians. The International Law Commission (ILC) of the United Nations, after many years of work adopted a set of Draft Articles on the Law of the Non-Navigational Uses of International Watercourses, and defined an international watercourse as "a watercourse, parts of which are situated in different States." The ILC did not distinguish between "international and transboundary rivers," thereby tending to support the Syrian and Iraq view. While the ILA and ILC drafts set out a series of criteria to be used in determining what was an equitable division in a given case, the problem in practice has been that different states emphasize certain principles over others (Sela, 1999).

The UN General Assembly on May 21, 1997, passed a resolution adopting the ILC-prepared draft Convention on the Law of the Non-Navigational Uses of International Watercourses. The vote was 103 in favor to 3 against (Turkey, China and Burundi) with 27 abstentions. The Convention was to be open for signature for three years and was to go into effect upon ratification by 35 countries, or only 18% of the UN's current 185 members (United Nations, 1999). [By December 1998 only 11 states had done so.] Syria has been a strong supporter of the

Convention and had unsuccessfully proposed mandatory submission of unresolved water disputes to the International Court of Justice. Syria's UN Ambassador, Dr. Mikhail Wehbe, claimed that since the Convention now embodied the "norms of international law" it had become part of the customary law binding on all states (Wehbe, 1999). This point was elaborated upon in a lengthy essay by Dr. Badre Kasma, Syria's legal expert on water in Geneva (Kasma, 1998). Syria did succeed in having included in Article 33 of the draft, dealing with the settlement of disputes, a provision that if the parties were unable to resolve their dispute within six months of a call for negotiations, a commission of inquiry could be created on the demand of a single party. Although the findings of the commission were not necessarily binding, and the submission of the dispute to arbitration or judicial decision still required approval of both, the presumption was that the findings of an impartial body would carry considerable moral weight.

In explaining Turkey's vote against the resolution, Ambassador Huseyin Celem said that as a Framework Convention, it should have only set out general principles and not establish "a mechanism for planned measures." Such a practice had "no basis in international law," created an obvious inequality between states by in effect giving "a veto right" to lower riparians over the development plans of upper riparians, and that instead of setting out compulsory rules for dispute settlement, the Convention should have left this to the discretion of the states concerned. Turkey also objected to the failure of the Convention to make any reference to "the undisputable principle of the sovereignty of the watercourse States over the parts of international watercourses situated in their territory." [Similar objections were raised by the representative of China and several other members (UNGA, Press Release GA/9248, 21 May 1997.)] Moreover, Turkey believed that the Convention should have "established the primacy of the principle of equitable and reasonable utilization over the obligation not to cause significant harm." Therefore Turkey would not sign the Convention, which would not have "any legal effect for Turkey in terms of general and customary international law" (Celem, 1997).

What is equitable? Gruen (1993) notes that Kolars and Mitchell estimate that the total average natural flow of the Euphrates measured at Hit, Iraq is around 33,000 Million Cubic Meters (Mm^3/yr), which translates to an average of 902 m^3/sec for the period 1924-1973, i.e., before the construction of recent major dams. Beaumont estimates that the 500 m^3/sec that Turkey is releasing to Syria amounts to 15,768 Mm^3/yr , or roughly half of the river's natural flow. He concludes that since some 90% of the river's water originates in Turkey, in terms of both "international precedent" and "natural justice, it does not seem unfair that Turkey should be able to utilize up to one half of the water which is generated within its borders" (Beaumont, 1992). The Arab view appears based on a simple calculation: There are three riparian states, each entitled to an equal "share," thus limiting Turkey to only one-third (or about 300 m^3/sec) and leaving the remaining two-thirds to be divided by Syria and Iraq.

Basing themselves on the ILC endorsed principles of "optimum, reasonable and equitable utilization of the water," Turkish officials contend that climactic and other factors make it more economical for Turkey to concentrate on food production and to exchange the surplus for Iraqi oil and Syrian gas. Turkey has offered to pay the cost of a scientific survey of the optimum uses of the region's water resources and has offered to work jointly with Syria on developing water saving technologies and cleaning up of irrigation return flow before it reaches Syria. In a meeting with the author in April, 1999, Dr. Kasma and Ambassador Wehbe acknowledged that the Syrian land was not as productive as Turkey's, but that was precisely why Syria required more water and therefore the natural flow of the river should be maintained. Syria favored the introduction of water saving technology, such as drip irrigation, but this required capital investment and it would take time to introduce new technology and change cultural patterns. Dr. Wehbe contended that the ILC had ruled that comparative economic output was not to be a criterion for allocating international waters, and Ambassador Wehbe stressed that food security was an important principle to be maintained, adding that if Syria was deprived of sufficient water to irrigate its land, there would be migration out of the rural areas, social dislocation and unemployment (Wehbe and Kasma, 1999). Sela recently noted that the "Syrian economy is largely dependent upon agriculture," accounting for 25 percent of the labor force and nearly 30 percent of the GDP (Sela, 1999).

GAP officials are aware of the importance of providing on-site training to Turkish farmers in the GAP area in modern farming methods, including the use of water-saving techniques, in providing the necessary technology and equipment for drip irrigation, "to promote farm mechanization in proper combination with the application of fertilizer, agro-chemicals and irrigation water," and in promoting marketable crops "effective in overcoming adverse agro-ecological conditions (Gruen, 1993). Turkey recently concluded an agreement with Israel under which the International Cooperation Department (MASHAV) of Israel's Foreign Ministry brings GAP decision-makers and regional directors to participate in multi-disciplinary rural development training courses in Israel, and Israeli teams of experts in rural development and immigrant absorption are working with Turkish officials to introduce cooperative management concepts, in addition to modern agricultural and animal husbandry techniques to assist the modernization process in the GAP region (Arbel, 1998). They have begun to apply in the GAP region the drip irrigation techniques and other environmentally-friendly technologies that had been introduced by American and Israeli experts in the Moslem Turkic Central Asian Republics of the Commonwealth of Independent States. Israeli irrigation experts from Kibbutz Gvat working with Uzbeki cotton farmers have already demonstrated that drip irrigation techniques not only reduce environmental damage from over-intensive cotton farming, but also improve crop yields. Already in 1992, Beaumont was one of the international experts who urged Turkey to reconsider the furrow and flood irrigation methods originally planned for the GAP

area and substitute sprinkler, trickle and drip systems (Beaumont, 1992). Turkish diplomats and agricultural and hydrological experts have been urging Iraq and Syria to do likewise, adding that the available supply would be adequate if they ended their wasteful traditional open-channel and flood irrigation practices (Bağış *et al.*, 1993).

5. Turkish Water Exports to Promote Regional Peace

Shortly after the signing of the Israel-PLO agreement on September 13, 1993, Turkish Foreign Minister Hikmet Çetin reiterated Ankara's position that "as part of the peace process," Turkey was prepared to supply water to Israel and its Arab neighbors from sources on the southern coast of Anatolia, "such as the Manavgat, Ceyhan and Seyhan Rivers." In fact, he told the author in New York on September 28, 1993, he doubted that lasting peace between Israel and Syria, Jordan and the Palestinians could be achieved without the addition of Turkish water supplies. When Çetin visited Israel in November 1993, he received a positive response in principle from Foreign Minister Shimon Peres. This was not a new idea. In fact it represented a scaled-down version of the late President Turgut Özal's grandiose proposal in 1986 of a "Peace Water Pipeline," a \$21 billion project to bring water from the Seyhan and Ceyhan Rivers via two pipelines to supply nearly six million cubic meters of water daily to the major cities in Syria, Jordan and the Arab Gulf states. In the face of Arab objections, Turkish officials explained that export of water to Israel, which was originally included in the plan, would have to await Arab-Israeli peace (Gruen 1994). Nevertheless, Syria in its December 1992 démarche to the Arab League, continued to allege that the Turkish Peace Pipeline proposal was "a plot to give Israel large quantities of water." The project never got off the ground, because the oil-rich Arab states in the Gulf, who had been expected to fund the pipeline, claimed that gas-fuelled desalination was economically cheaper and politically preferable, since one of their upstream neighbors might turn off the pipeline tap. (Yet large desalination plants are also potentially vulnerable, as the Gulf Arabs learned in the conflict after Saddam Hussein's invasion of Kuwait.)

Shortly after the start of the Arab-Israel peace process in Madrid in October 1991, Turkey joined the multilateral working group on water resources. Senior Turkish officials, including President Demirel and Prime Minister Tansu Çiller at first expressed support for a shorter pipeline, estimated to cost \$5 billion, to convey Turkish water to Syria, Jordan, Israel and the Palestinians. However, Syria – through whose territory any pipeline would have to go – has refused to attend any of the multilateral committees, demanding that Israel make a commitment to total withdrawal from the Golan Heights before Damascus would even consider discussing any regional cooperation with Israel. Noting that such a pipeline "could supply both Israel and Syria," Çiller stressed during her visit to Israel in November

1994, "But first we need peace" (Silver). Although the election of Ehud Barak as Israel's prime minister in May 1999 may lead to early resumption of the Israeli-Syrian talks broken off in 1996, as of this writing Damascus has still refused to join the multilateral groups, including the one on water.

The emphasis in Ankara has therefore shifted to giving priority to plans to convey water from uncontestedly purely Turkish rivers to Cyprus. The island is suffering from a prolonged three-year drought, which has exacerbated the long term problems of a falling water table and increasing seawater intrusion due to over-pumping of the aquifers to meet the growing demands of the local population in both the Greek and Turkish parts of the island and to sustain the lucrative and expanding tourist industry. Christos Marcoulis, a senior official in the Cyprus Republic's water development department, declared in June 1999: "We can't rely on rainfall. Over the past three years the dams have become exhausted and aquifers haven't been replenished. Development of new water resources is a priority" (Hope, 1999). The initial response of the Greek Cypriote authorities has been to offer concessions for the construction of desalination plants, which have thus far contributed 40,000 mc³ of drinking water daily. The Turkish Republic of Northern Cyprus (TRNC) has turned to water imports as the main answer. In the Summer of 1998, a Norwegian-Turkish joint venture began to deliver water from a spring near Alanya on Turkey's southern Mediterranean coast to Güzelyurt in Turkish-controlled northern Cyprus. The water is being brought by tugboats, towing "giant cucumbers," plastic bags 390-ft long and 84-ft wide when inflated. Initially the bags will carry 10,000 m³ (about 10,000 tons) of water each, but plans are to increase the capacity to 20,000. If current technical problems can be overcome, the project will transport 3 MCM the first year, and if "cucumber convoys" can be put together, the capacity will rise to 7 MCM annually. But this quantity, while easing the shortage of drinking water, with many homes currently getting fresh water only once or twice a week, will not be sufficient to meet the farmers' needs for irrigation. The Norwegians anticipate a price of Nkr4.2 a cubic meter (around 50 US cents).

A more significant project that will provide a long term solution and may also help promote Turkish-Greek cooperation on the long-divided island is a 78 km. suspended underwater pipeline (of 1600 mm diameter HDPE) that will transport drinking and irrigation water from the Dragon River on Turkey's Mediterranean coast to Güzelyurt in northern Cyprus. The project which has received official approval in Ankara, is being undertaken by a consortium of Turkish and European firms headed by Alarko Holding of Istanbul, one of Turkey's largest conglomerates and experienced construction companies. According to information provided to the author by Dr. Uzeyir Garih, President of Alarko, the pipeline will be able to provide 75 MCM of water annually at an estimated cost of between 25 and 34 cents. This is considerably less than the estimated cost of the plastic balloon process and around one-third the cost of desalination plants, with per cubic meter costs still generally between 75 cents and over \$1 (Garih, 1999). The

total cost of the pipeline project is estimated at \$225 million, for which international financing is being sought.

The most exciting part of the Dragon-Güzelyurt pipeline project is its potential contribution to Turkish-Greek confidence-building and practical cooperation. According to Ali Budak, project manager of Alarko's Cyprus project, "In the feasibility study, the quantity of 75 million m³ per year is foreseen for the year 2025." However, since the current water needs in the Turkish part of Cyprus is only 30 million m³, "the extra amount of water that will be transported every year after the realization of the Peace Water Project can be used for the whole island." Dr. Üzeyir recalls that many years ago the late President Özal had called him late one night to urge him to develop such a water-sharing proposal as a means of using Turkish water not only to meet the practical needs of the Cypriote population but to serve as a catalyst to building confidence among the long hostile Greek and Turkish local communities. Özal died in 1993 before he could act on this idea. But it has been vigorously pursued by President Demirel. In mid-December 1998 an informal group of businessmen from Turkey, Greece and both the Greek and Turkish communities in Cyprus met in Istanbul and issued a statement welcoming the Alarko pipeline project. Unfortunately, following the revelation that PKK leader Ocalan had been aided by Greece and even been hosted by the Greek ambassador in Kenya, the Turkish members walked out in protest. The talks have not yet resumed.

Most recently, Alarko has proposed a similar underwater pipeline project to convey water from the Manavgat River near Antalya to a site along Israel's eastern Mediterranean coast, from whence it can be conveyed in Israel's existing network to anywhere in the country and potentially also to Palestinian territory or the West Bank. It could also replace some of the water Israel is committed to supply to Jordan under their 1994 Treaty. While the distance is greater than to Cyprus, a pipeline similar to the one being constructed to Cyprus will be employed and anchored around 100 meters below the sea surface. Dr. Garih estimates that the total cost of building a project that will bring 50 MCM annually will be between \$200 and \$300 million. Assuming that the Turkish Water Authority agrees to charge the Israeli buyer 4 to 5 cents per m³, and the project can obtain international financing for a 20 -25 year loan at 4%, "the water will cost less than 30 US cents" (Garih letter to Gruen, April 26,1999). In order to obtain international funding for either the Cyprus or the Israel pipeline projects, agreements have to be concluded by the parties, including reliable long term supply contracts and formal legal mechanisms to insulate the agreement from political interference in case there are changes in government.

If Greek and Turkish Cypriotes can reconcile their differences and if the new Barak Government in Israel succeeds in its efforts to conclude lasting agreements with Lebanon, Syria and the Palestinians, then former Prime Minister Shimon Peres' optimistic vision of a new Middle East may finally have a chance. Long a supporter of Turkish-Israeli cooperation as means to transform the Middle East,

Peres would frequently point out that the European Union had begun with limited cooperation by two longtime enemies, France and Germany, in the fields of coal and steel. Similarly, he was confident that a new peaceful Middle East could grow out of cooperation in the fields of tourism and water resources.

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